

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

- 1-31. (Canceled)
32. (Currently Amended) A method of cleaning a wafer comprising:
spinning a wafer having a frontside and a backside;
exposing said frontside of said spinning wafer to an etchant or cleaning chemicals;
after exposing said wafer to said etchant or cleaning chemical ~~and prior to dispensing DeIonized (DI) water on said etchant or cleaning chemical covered wafer~~
~~exposing~~ applying on said frontside of said spinning wafer to a volume of liquid or vapor having a lower surface tension than water; and
after applying the volume of liquid having a lower surface tension than water, applying onto the frontside of said wafer a volume of liquid water, which has been DeIonized (DI),
wherein the volume of liquid having a lower surface tension than water and the volume of liquid DI water are uncombined and each applied separately to the frontside of the wafer
~~after exposing said wafer to said liquid or vapor having a lower surface tension than water, rinsing said frontside of said wafer with DI water.~~
33. (Canceled)

34. (Previously Presented) The method of claim 32 further comprising applying megasonics energy to said backside of said wafer while exposing said frontside of said wafer to said cleaning chemicals or etchants.

35. (Canceled)

36. (Currently Amended) The method of claim 32 further comprising applying megasonics energy to said backside of said wafer while ~~rinsing~~ applying DI water to said frontside of said wafer.

37. (Currently Amended) A method of rinsing chemicals or etchants from a wafer comprising:

rotating a wafer having a frontside and a backside;

dispensing a volume of cleaning chemicals or etchants onto said frontside of said wafer to form an etchant or chemical covered wafer;

immediately after dispensing said volume of cleaning chemicals or etchants onto said rotating wafer, applying a volume of liquid or vapor produced from a liquid having a lower surface tension than water onto said cleaning chemical or etchant covered wafer; and

immediately after applying said ~~liquid or~~ volume of vapor produced from a liquid having a lower surface tension than water, dispensing a volume of liquid DeIonized (DI) rinse water onto said frontside of said spinning wafer,

wherein the volume of vapor produced from a liquid having a lower surface tension than water and the volume of liquid DI water are uncombined and each applied separately to the frontside of the wafer.

38. (Previously Presented) The method of claim 37 further comprising heating said DI rinse water prior to dispensing said DI rinse water on said frontside of said wafer.

39. (Previously Presented) The method of claim 38 wherein said DI rinse water is heated to a temperature between 60-70°C.

40. (Previously Presented) The method of claim 37 further comprise applying megasonics energy to said backside of said wafer while dispensing said DI rinse water onto said frontside of said wafer.

41. (Previously Presented) The method of claim 37 further comprising stopping said dispensing of said DI rinse water and spinning said wafer dry.

42. (Currently Amended) A method of cleaning or etching a wafer comprising:

placing a wafer having a frontside and a backside on a support over a plate having a plurality of transducers formed thereon, wherein said wafer is horizontally supported and separated by a gap from said plate;

flowing a backside liquid in said gap between said backside of said wafer and said support;

dispensing chemicals or etchants onto said frontside of said wafer to form a chemical or etchant covered wafer while flowing said liquid in said gap;

after dispensing said chemicals or said etchant, ~~and prior to dispensing Delonized (DI) rinse water on said chemical or etchant covered wafer~~, dispensing a volume of liquid having a lower surface tension than water or a volume of vapor produced

from a liquid having a lower surface tension than water onto said chemical or etchant covered wafer; and

after applying said volume of vapor or volume of liquid, dispensing a volume of DeIonized (DI) DI rinse water onto said frontside of said spinning wafer,

wherein the volume of liquid having a lower surface tension than water or the volume of vapor produced from the liquid having a lower surface tension than water, and the volume of DI water are uncombined and each applied separately to the frontside of the wafer;

applying megasonics energy to said backside of said wafer from said transducer while dispensing said volume of DI rinse water onto said frontside of said wafer; and

after exposing said frontside of said spinning wafer to DI water, blowing a fluid at the center of the frontside of said wafer while said wafer is spinning with sufficient force to remove a DI water bulge formed at the center of the wafer.

43. (Previously Presented) The method of claim 42 further comprising applying megasonics energy to said backside of said wafer from said transducers while said dispensing of said chemical or said etchant.

44. (Previously Presented) The method of claim 42 further comprising heating said DI rinse water prior to applying said DI rinse water onto said frontside of said wafer.

45. (Previously Presented) The method of claim 44 wherein said DI rinse water is heated to a temperature between 60-70°C.

46. (Cancelled)

47. (Currently Amended) The method of claim 32, further comprising after exposing said frontside of said spinning wafer to DI water, blowing a fluid gas at the center of the frontside of said wafer while said wafer is spinning to remove a DI water bulge formed at the center of the wafer.

48. (Currently Amended) The method of claim 37, further comprising after exposing said frontside of said spinning wafer to DI water, blowing a gas at the center of the frontside of said wafer while said wafer is spinning with sufficient force to remove a DI water bulge formed at the center of the wafer.

49. (Currently Amended) The method of claim 36 ~~40~~, further comprising after exposing said frontside of said spinning wafer to DI water, blowing a gas at the center of the frontside of said wafer while said wafer is spinning with sufficient flow to remove a DI water bulge formed at the center of the wafer.

50. (Cancelled)

51. (New) The method of claim 32, wherein the liquid having a lower surface tension than water comprises isopropyl alcohol (IPA).

52. (New) The method of claim 37, wherein the vapor produced from a liquid having a lower surface tension than water comprises isopropyl alcohol (IPA).

53. (New) The method of claim 42, wherein the liquid having a lower surface tension than water comprises isopropyl alcohol (IPA); and

wherein the vapor produced from a liquid having a lower surface tension than water comprises isopropyl alcohol (IPA).

54. (New) The method of claim 42, wherein the fluid, which is blown onto the center of the wafer to remove a DI water bulge formed at the center of the wafer comprises liquid isopropyl alcohol (IPA).

55. (New) The method of claim 42, wherein the fluid, which is blown onto the center of the wafer to remove a DI water bulge formed at the center of the wafer comprises a gas selected from the group consisting of isopropyl alcohol (IPA) vapor, nitrogen gas, helium gas, argon gas, and any combination thereof.